Research Article / Araştırma Makalesi
Evaluation of the Quality and Reliability of YouTube Videos on Polymyalgia Rheumatica
Polimiyaljia Romatika ile İlgili YouTube Videolarının Kalitesi ve Güvenilirliğinin Değerlendirilmesi

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Abstract: To investigate polymyalgia rheumatica (PMR)-related YouTube videos' quality and reliability. We searched the term "polymyalgia rheumatica" on https://www.youtube.com. The most viewed 60 YouTube videos about PMR were analyzed by two independent physiatrists. Study data used in the analysis included upload date, total views, number of likes and comments, length of video, contents of video, source of the uploader, and targeted population. The Global Quality Scale (GQS) and the Modified DISCERN tool were used to assess PMR-related video quality and reliability, respectively. Comparative analyses of video features, quality, and reliability were performed based on source of uploaders (professional and non-professional) and GQS score subgroups. Of the videos analyzed, 76.7% and 61.7% of the uploaded videos were related to symptoms and treatment, respectively, and 65% of the videos were uploaded by healthcare professionals. The median GQS and modified DISCERN tool scores were 3 in professionals and 2 in non-professionals (p< 0.001 and p = 0.001, respectively). According to the GQS score, there was no significant difference in terms of total views, number of likes, number of comments, and view ratio values between low, moderate, and high quality videos. 35% of the YouTube videos concerning PMR were uploaded by non-professionals with poor reliability and quality. Therefore, healthcare professionals need to produce videos that provide more accurate and high quality information about PMR on this platform. Before being published, YouTube videos should be evaluated objectively for the accurity of their content.
Keywords: Polymyalgia rheumatica, quality, reliability, YouTube

Özet: Amacımız Polimiyaljia romatika (PMR) ile ilgili YouTube videolarının kalitesini ve güvenilirliğini araştırmaktır. https://www.youtube.com'da "polimiyalji romatika" terimi ile arama yaptık. PMR ile ilgili en çok izlenen 60 YouTube videosu iki bağımsız fiziatrist tarafından analiz edildi. Analizde kullanılan çalışma verileri arasında yükleme tarihi, toplam görüntüleme, beğeni ve yorum sayısı, videonun uzunluğu, videonun içeriği, yükleyicinin kaynağı ve hedeflenen popülasyon yer almaktadır. PMR ile ilgili videoların kalitesini ve güvenilirliğini değerlendirmek için Küresel Kalite Ölçeği (GQS) ve modifiye DISCERN kullanıldı. Video özelliklerinin, kalitesinin ve güvenilirliğinin karşılaştırmalı analizleri, yükleyicilerin kaynağına (profesyonel ve profesyonel olmayan) ve GQS alt gruplarına göre gerçekleştirildi. Değerlendirilen videoların %76,7'si semptomlar ve %61,7'si tedavi ile ilgili olup, %65'i sağlık profesyonelleri tarafından yüklenmiştir. GQS ve modifiye DISCERN ortanca puanları profesyonellerde 3 ve profesyonel olmayanlarda 2 idi (sırasıyla p< 0,001 ve p = 0,001). GQS puanına göre düşük, orta ve yüksek kaliteli videolar arasında toplam izlenme sayısı, beğeni sayısı, yorum sayısı ve izlenme oranı değerleri açısından anlamlı bir fark bulunamadı. PMR ile ilgili YouTube videolarının %35'i profesyonel olmayan kişiler tarafından yüklenmiş olup güvenilirlik ve kaliteleri düşüktür. Bu nedenle sağlık profesyonellerinin bu platformda PMR hakkında daha doğru ve kaliteli bilgi veren videolar üretmesi gerekmektedir. YouTube videoları yayınlanmadan önce içeriklerinin doğruluğu açısından objektif olarak değerlendirilmelidir.
Anahtar Kelimeler: Polimiyaljia romatika, kalite, güvenilirlik, YouTube

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1. Introduction

Polymyalgia rheumatica (PMR) is one of the most common inflammatory rheumatologic diseases in people older than 50 years of age. Women are affected 2-3 times more frequently. The number of patients is expected to increase with the aging population. Up to 80 years of age, the incidence increases for both sexes [1,2]. The clinical presentation is acute and subacute, with morning stiffness, constitutional symptoms, and pain at various sites, particularly the shoulder, pelvic girdle, and proximal upper and lower extremities [3]. According to the American College of Rheumatology (ACR)/European League Against Rheumatism (EULAR) classification criteria, the diagnosis is based on the presence of clinical, laboratory, and ultrasonographic findings [4]. Glucocorticoids, disease-modifying anti-rheumatic drugs, and biological agents are included in the treatment algorithms [5].

Today, the use of the internet has become an important part of our lives. The internet, which is used to obtain information on many aspects of life, is also frequently used in health-related research. It is important that the sources of health information are accurate and reliable. 86% of people who search for health information on the internet are concerned about the reliability of the information, and 44% believe that only some of this information is accurate [6]. YouTube, a video-sharing platform, is the second most frequently used website. Also, it stands out among available social media platforms considering it has more than two billion connected users who have used it as a source of health information [7]. Health-related videos are also uploaded, and there is no control mechanism before they are published [8]. Therefore, users may obtain incorrect information. At the point of users' access to accurate and reliable information, uploaded videos must be evaluated for quality and reliability.

Recently, several studies have reported on the content, reliability, and quality of YouTube videos on a broad range of autoimmune inflammatory rheumatic conditions, including rheumatoid arthritis, ankylosing spondylitis, and vasculitis [6,9,10]. Thus, this current study aimed to evaluate the characteristics and content of videos published on YouTube related to PMR.

2. Materials and Methods

A cross-sectional study design was applied. We searched the video publishing platform YouTube (https://www.youtube.com) using the term "polymyalgia rheumatica" on March 29, 2023. Cookies and browsing history were cleared before each search to avoid being influenced by previous search results. As the majority of users do, YouTube's default relevance mode was used for screening. The analysis was restricted to English-language videos only. Advertisements, videos unrelated to PMR, duplicated in part or whole, music videos, and those without audio were excluded. These exclusion criteria were implemented based on previous research [11]. The videos were evaluated and classified by two independent physicians; a rheumatologist and a physiatrist. All disagreements between the authors were settled through reconsideration and consensus. The first 60 videos that met the eligibility criteria were evaluated. The study does not include animal or human participants. Also, YouTube is a free and public platform. Therefore, ethics committee approval was not required.

The time since the upload date on YouTube (months), total views, number of likes and comments, and length of the video (seconds) were recorded for further analysis. Additionally, the source of the upload (physician, non-physician health professionals, patients, other independent users, news agencies, university channels/professional organizations, and medical journals), contents of the videos (symptoms, diagnosis and differential diagnosis, pathogenesis, treatment, risk factors, prognosis, nutrition, exercise), and targeted population (health professionals, patients, and both) were documented. Video popularity was evaluated using the view ratio and calculated by the formula: View ratio = number of views ÷ upload date (day).

The Global Quality Scale (GQS) was used to assess the content quality of videos on the online resources, which has been previously used in several studies [8,12,13]. This scale evaluated the availability and quality of the information, as well as the information's overall flow and usefulness to the user. The scores of 1–2 points were regarded as indicative of low quality, 3 points of moderate quality, and 4–5 points of high quality.

The Modified DISCERN tool (Quality Criteria for Consumer Health Information) was used to assess video reliability, which consists of a total of 5 items and has a score ranging from 0-5 adapted by Singh et al from the original DISCERN tool. Each yes answer scores one point. Higher scores suggested better reliability [9,14].

Statistical Analysis

The sample size was calculated using the G*Power® program (Heinrich-Heine-Universität Düsseldorf, Düsseldorf, Germany). Based on the values obtained from the previous study (5) in the literature by accepting GQS/DISCERN as the primary assessment tool, the sample size was calculated as a total of 60 videos at an alpha significance level of 0.05 at 95% power, assuming an effect size of 0.5 difference at the medium level. IBM® SPSS® (IBM Corp., Armonk, NY, USA) statistical software version 23.0 was utilized for data analysis. The Shapiro-Wilk test was used to determine the normality of the data. Results of the continuous variables were shown as either mean ± standard deviation or medians [25% (q1) - 75% (q3) quartiles], while categorical variables were presented as numbers (percentages). The Mann-Whitney U and Pearson's chi-squared tests were used to evaluate statistically significant differences in the general characteristics and evaluation results of the videos in the groups categorized as professional and non-professional uploaders. Additionally, a comparative analysis of variables stratified for GQS score was performed by the Kruskal Wallis test. Spearman's correlation analysis was used to evaluate the interrater consistency. The values were expressed as Spearman's rho (ρ). *P* values below 0.05 were accepted as "statistically significant".

3. Results

The 60 most-viewed YouTube videos about PMR were included in the study after eliminating the videos that did not meet the eligibility criteria. The targeted population of the videos consisted of 61.7% patients, 26.7% health professionals, and 11.7% of both**.** The contents of the videos consisted of symptoms in 46 (76.7%), diagnosis in 25 (41.7%), treatment in 37 (61.7%), and differential diagnosis in 17 (41.7%). The sources of video uploaders were categorized as professional and non-professional. 65% of the videos were uploaded by professionals and 35% by non-professionals. 53.3% of professionals were physicians. The median total view of the videos was 2657. The number of likes, length, and time since the upload date of the videos were 35.5 (11.5-147.2), 318 (173-551.3) seconds, and 24 (10-46.3) months, respectively. Detailed information about the main characteristics of the evaluated videos was presented in Table 1.

The modified DISCERN and GQS were utilized to assess the reliability and quality of the videos. According to the GQS, the videos were divided into three categories, with scores of 1–2, 3, and 4-5 representing low, moderate, and high quality, respectively. The majority of the videos (38.3%) were of low quality. Of the remaining evaluated videos, 31.7% were moderate and 30% were high quality videos. When the modified DISCERN scale score distribution was analyzed, 28.3% of the videos scored 3 points, 25% scored 4 points, and 21.7% scored 1 point (Table 1). The distribution of the videos according to GQS and modified DISCERN tool scores was shown in Figure 1.

The mean modified DISCERN tool scores provided by researchers 1 and 2 were found to be 2.63±1.3 and 2.75±1.3, respectively. Whereas the mean GQS scores from the two researchers were 2.68±1.2 and 2.78±1.2, respectively. The compatibility between two researchers was assessed using correlation analysis. The results of the correlation analysis were given in Table 2. A significant

positive strong correlation (Spearman's rho = 0.955 to 0.915, respectively) was found between 2 researchers in terms of the GQS and modified DISCERN assessment scores (Table 2).

We evaluated the video uploaders in two groups as professionals and non-professionals. There was no statistically significant difference between the two groups in terms of targeted population, total views, number of likes, or comments. The median upload date was 17 months for professionals and 29 months for non-professionals (p = 0.016). The median video length was 344 seconds for professionals and 198 seconds for non-

professionals (p = 0.026). The median view ratio was 7.32 for professionals and 2.74 for non-professionals (p = 0.020). The median GQS and modified DISCERN tools were 3 in professionals and 2 in non-professionals (p < 0.001 and p = 0.001, respectively) (Table 3).

When the quality of the videos was classified into 3 groups as low, moderate, and high according to the GQS score, there was no significant difference in terms of total views, number of likes, number of comments, or view ratio values. The length of high quality videos was 471 seconds (314-637.5) statistically significantly higher than those of low and moderate videos (Table 4).

Table 1. Baseline characteristics of the videos

	n (%)
Targeted population	
Health professionals	16 (26.7)
Patients	37 (61.7)
Both	7 (11.7)
Contents	
Symptoms	46 (76.7)
Diagnosis	25 (41.7)
Treatment	37 (61.7)
Differantial diagnosis	17 (28.3)
Pathogenesis	7 (11.7)
Risk factors	1 (1.7)
Prognosis	6 (10)
Nutrition	3 (5)
Exercise	5 (8.3)
Source of the uploader	
Professionals	39 (65)
Physician	32 (53.3)
Non-physician health professionals	4 (6.7)
University channels/Professional organizations	2 (3.3)
Medical journals	1 (1.7)
Non-professionals	21 (35)
New agencies	2 (3.3)
Patients	5 (8.3)
Other independent users	14 (23.3)
GQS	
Low (1-2)	23 (38.3)
Moderate (3)	19 (31.7)
High (4-5)	18 (30)
Modified DISCERN Tool	
1	13 (21.7)
2	9 (15)
3	17 (28.3)
4	15 (25)
5	6 (10)

Values are presented in: n (%), GQS: Global Quality Scale, DISCERN: Quality Criteria for Consumer Health Information

Table 2. Correlation Analysis of the Physicians in Terms of Evaluation Tools

	Mean±Standard deviation	p	r	Cronbach's α
Modified DISCERN Tool 1	2.63±1.3	**<0.001**	0.915	0.947
Modified DISCERN Tool 2	2.75±1.3			
GQS 1	2.68±1.2	**<0.001**	0.955	0.952
GQS 2	2.78±1.2			

GQS: Global Quality Scale, DISCERN: Quality Criteria for Consumer Health Information, ρ: Spearman's rho
The bold values indicate statistical significance (p < 0.05)

Table 3. Comparison of the video characteristics according to the source of the uploader

	Professionals (n=39)	Non-professionals (n=21)	p
			p†
Targeted population			
Health professionals	14 (35.9)	2 (9.5)	0.118
Patients	21 (53.8)	16 (76.2)	
Both	4 (10.3)	3 (14.3)	
			p‡
Total views	2801(1318-10000)	1129(473.5-16000)	0.425
Upload date (months)	17 (7-30)	29 (14.5-84)	**0.016**
Number of likes	38 (15-150)	19 (4.5-122.5)	0.336
Comments	3 (1-20)	0 (0-8.5)	0.072
The lenght of video (seconds)	344 (193-597)	198 (128-391)	**0.026**
View ratio	7.32 (2.05-25.55)	2.74 (0.82-9.74)	**0.020**
GQS	3 (3-4)	2 (1-3)	**<0.001**
Modified DISCERN tool	3 (3-4)	2 (1-3)	**0.001**

Values are presented in: n (%) or median (q1-q3)
The bold values indicate statistical significance (p < 0.05), †: Pearson's chi-squared test, ‡: Mann-Whitney U
GQS: Global Quality Scale, DISCERN: Quality Criteria for Consumer Health Information

Table 4. Comparison of the video characteristics stratified by GQS score

	Low (n=23)	Moderate (n=19)	High (n=18)	p
				p†
Targeted Population				
Health professionals[a]	1 (4.3)	4 (21.1)	11 (61.1)	**<0.001**
Patients[a]	20 (87)	14 (73.7)	3 (16.7)	
Both[a]	2 (8.7)	1 (5.3)	4 (22.2)	
				p‡
Total views[b]	2682 (692-10000)	2400 (841-32000)	2953.5 (950.5-11558.5)	0.707
Number of likes[b]	22 (8-145)	37 (8-237)	58 (15.25-228)	0.647
Comments[b]	2 (0-9)	3 (0-20)	4 (0.75-31.5)	0.511
The lenght of video (seconds)[b]	208 (167-433)	222 (110-446)	471 (314-637.5)	**0.010**
View Ratio[b]	2.74 (0.91-7.73)	10.76(2.05-26.66)	6.99 (2.39-35.59)	0.061

[a] values represent n (%), [b] values represent median (q1-q3)
The bold values indicate statistical significance (p < 0.05)
†: Pearson's chi-squared test, ‡: Kruskal Wallis test
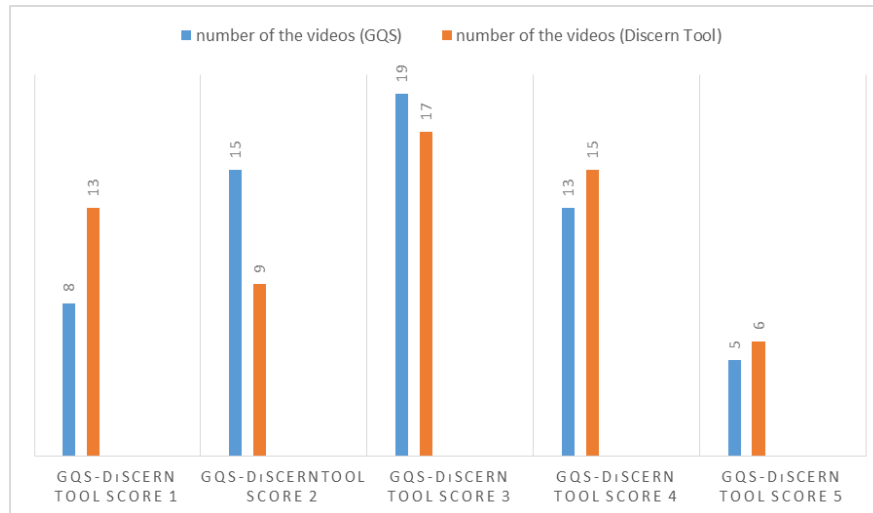*GQS: Global Quality Scale*

Figure 1. Distribution of videos according to the Global Quality Scale and Modified DISCERN Tool score (GQS: Global Quality Scale, DISCERN: Quality Criteria for Consumer Health Information)

4. Discussion

YouTube is a popular source of health-related educational materials and patient information that has an important effect on individual choices and behavior. However, it contains a vast array of unreliable information that may encourage unhealthy behaviors and activities [15]. Patient education is an important determinant of treatment adherence for chronic rheumatic diseases such as PMR, especially targeting the elderly patient population. In the current study, we evaluated the content, quality, and reliability of PMR-related YouTube videos as an alternative information source for both patients with PMR and medical staff. The most common video source was physicians, and the videos uploaded by health professionals had higher quality scores compared to those uploaded by non-professional. However, the median GQS scores for professionals and non-professionals were 3 (3–4) and 2 (1-3), respectively. The current study determined that the YouTube videos on PMR were of insufficient quality to serve as a source of patient information or health-related education.

The ever-increasing use of the internet around the world has become more evident with the COVID-19 pandemic, especially in the elderly population [16]. The internet is not always a reliable and accurate source of medical and health-related information. PMR is a rheumatologic disease that mostly affects older people. It is already hard to treat, but it gets even harder when you consider how factors like multiple comorbidities, polypharmacy, and the biological effects of aging affect this group [17,18]. It is therefore crucial that this patient population be properly informed via video upload platforms such as YouTube. Recently, several studies examined the quality and reliability of YouTube videos on a diversity of autoimmune/autoinflammatory rheumatic conditions, including rheumatoid arthritis, familial Mediterranean fever, spondyloarthritis, gout, and Behçet disease [6,8,19,20]. The vast majority of uploaded videos were related to the symptoms and treatment of patients with rheumatic diseases. Additionally, the target audience was mostly patients. Consistent with the literature [21-23], the current study revealed that 76.7% and 61.7 % of uploaded videos were related to symptoms and treatment, respectively. Of the videos analyzed, 61.7% were directed towards patients and 26.7% towards healthcare professionals.

In the current study, physicians directly uploaded more than half of the videos (53.3%). Yet, because the videos uploaded by university channels, professional organizations, and medical journals were

narrated again by physicians, we categorized the PMR-related videos into two main groups: professional and non-professional. Accordingly, 65% of the videos were uploaded by healthcare professionals, and the remainder were by non-professionals. In the literature, the rate of other inflammatory rheumatic condition-related YouTube videos uploaded by healthcare professionals was documented at 46% in Behçet disease [6], 61.5% in spondyloarthritis [20], 78.1% in autoinflammatory diseases [19], and 41.7% in systemic sclerosis [12]. Additionally, we found that PMR-related YouTube videos, especially those uploaded by non-professionals, were of low quality and reliability. The median GQS and modified DISCERN scores were found to be 3 (3–4) in the videos uploaded by medical professionals and 2 (1-3) in those uploaded by non-professionals, and 70% of the videos were of low to moderate quality according to the GQS score. The findings of the current study support the data on several rheumatic diseases in the literature [6,12,19]. Karakoyun and Yildirim determined that the GQS and DISCERN scores of the Behçet disease-related videos uploaded by non-professionals were of lower quality and reliability compared to those uploaded by professionals [6]. Additionally, Osman et al. [15] pointed out in their recently published systematic review that YouTube's popularity-driven metrics such as the number of views, likes, comments and view ratio should not be considered quality indicators. In our study, there was no significant difference in terms of total views, number of likes, number of comments, or view ratio values between groups stratified by GQS score. These findings were consistent with previously reported data from the YouTube study on many rheumatic diseases [6,8,12,24,25]. Therefore, YouTube users should not presume the quality of videos based on these popularity-driven metrics and should instead place greater emphasis on video sources.

Study limitations

There were some limitations to the current study. Since there was no dislike in the videos examined, the video power index and like ratio could not be calculated from the parameters used to evaluate the popularity of the video. Only English videos on YouTube were included in the study, and other social media sharing platforms were not included in the evaluation. YouTube is a dynamic platform whose content can change rapidly. Snapshots were evaluated in the study. The strengths of our study are that the videos were evaluated separately by two doctors, a rheumatologist and a physiatrist.

5. Conclusion

This study revealed that 35% of the YouTube videos on PMR uploaded by non-professional sources had low reliability and quality. Additionally, the results of this study support the idea that YouTube's popularity-based metrics, such as the number of views and likes, should not be considered quality indicators. Therefore, healthcare professionals need to produce videos that provide more accurate and high quality information about PMR on this platform, which is easily accessible to both healthcare professionals and patients. YouTube should also consider collaborating with professional organizations, such as EULAR and ACR, to screen and remove low-quality videos.

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Ethics